Emanuele Buchicchio (last update: Dec. 2025)

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Professional profile

Technology Leader, software engineer and Researcher (PhD, MBA) with 15+ years of professional experience and a lifelong passion for the intersection of science and technology. My professional journey has been defined by a dual commitment to industrial innovation and academic rigor, allowing me to bridge the gap between complex theory and practical, scalable software solutions.

Research and Accademia. My academic background includes a master's degree in computer engineering (2006), an MBA (2011), and a PhD in Industrial and Information Engineering (2024) focused on characterization of AI-based systems at the University of Perugia. My research focuses on uncertainty quantification in machine learning-based systems.

I currently serve as a Subject Expert and Research Affiliate at the University's Department of Engineering. My scientific work sits at the crossroads of Artificial Intelligence, Electronic Measurements, and Software Engineering, with a specific focus on applying metrological concepts to improve reliability, interpretability, and sustainability of AI based systems.

Industrial Experience. Professional software engineer since 2007. I had held both technical and managerial roles in several projects in Italy and abroad spanning diverse industries, including electronics, fashion, concrete production, CRM, and human resource management.

In July 2016, I joined *Smartpeg* and got into Industrial IoT, AI, and ML projects. Since 2019 I have held the position of Chief Technology Officer (CTO) and now I'm focusing on development software solutions for data driven human resource management and AI-powered software tools. Since 2024, I have been collaborating with *Nomos AI* on the development of services based on generative AI.

Expertise. CTO with 5+ years of experience in AI, IoT and software solutions. MBA-backed approach to product management and software lifecycles. PhD-level research in uncertainty quantification and AI/ML reliability. My scientific and professional interests, in addition to software engineering, include machine learning (ML), deep learning (DL), generative AI, large language model (LLM), cloud computing, DevOps, MLOps, cybersecurity, internet of things (IoT), and software quality.

Contributions. Beyond corporate roles, I enjoy sharing my passion and skills with others. I contribute to the Open-Source Software community, to Red Hot Cyber cybersecurity community and serve as an instructor for online learning platforms and training institutions.

Main Technical Skills

Programming: C#, Java, TypeScript, Angular, JavaScript, **Frameworks:** .NET, .NET Core, JavaEE, Spring, Angular, MVC. **AI/ML:** LLM, Deep Learning, Generative AI, MLOps, Uncertainty Quantification, Machine Learning. **Cloud/DevOps:** Azure, GCP, AWS, Jenkins, Azure DevOps. **Compliance**: ISO 27001, ISO 9000, GDPR, AI-Act, software performance and quality metrics, quality management systems. **Engineering**: web application and services, cloud native application, Industrial IoT, Embedded Systems, Measurements and data acquisition.

Other Languages: Italian: Native, English: C1, French: A1

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Work Experience

Research Affiliate (Italian "Cultore della Materia")

Electronic MEasurements Research Laboratory (EMELab) University of Perugia.   **Nov. 2024 - PRESENT**

- Research activities in the field of instrumentation & measurement, software engineering, machine learning and artificial intelligence.
- Focus on uncertainty quantification in machine learning-based systems and dependable AI applications

Technical Advisor   **Apr. 2024 – PRESENT**

Nomos AI – Torino - https://nomos-ai.it/

Chief Technology Officer (CTO)   **July 2016 - PRESENT**

Smartpeg srl – Perugia (PG) – www.smartpeg.eu

- Directing the design and development of enterprise web applications for private and government sectors using Java, Spring, .NET. and Typescript.
- Managing the lifecycle of software products
- Overseeing cloud-based hosting (AWS, Azure, GCP) and ensuring GDPR/ISO 27001 compliance.

Senior Software Developer   **June 2014 - July 2016**

Pegaso2000 srl – Corciano (PG) – www.pegaso2000.it

- Developed web applications for banking and government bodies using JavaEE, Spring, and AngularJS.

Consultant / Software Developer   **Feb. 2011- Jun. 2014**

Gianos Consulting S.r.l.- Orvieto (TR) – www.gianos.it

- Implementation of CRM solutions based on Sage SalesLogix.
- Design and development of web, hybrid and native and mobile application (iOS and Android)
- Business intelligence and reporting application with Crystal Reports XI e Microsoft Reporting Service

Product Manager   **Oct. 2008 - Jan. 2011**

Eles Semiconductor Equipment - Todi (PG) Italy – www.eles.com – info@eles.com

- Life cycle management of software and firmware products: requirements analysis and feasibility study for of new products, definition of roadmap of evolution of existing products,
- Technical and marketing documentation, training on software products and materials for courses

Software Engineer   **Jan. 2007 - Oct. 2008**

Eles Semiconductor Equipment - Todi (PG) Italy – www.eles.com – info@eles.com

- Design and development of software products with Microsoft .Net platform, C#, Visual C++
- Definition of development processes based on ISO9000 and CMMI quality management models.

Other work experience

- Since 2020: Instructor in online and in person courses (SW development, cloud, IoT, ML, AI, DevOps)
- 05/2006 - 11/2006: Internship at Eles Semiconductor Equipment. Software R&D Department
- 2004-2010: Freelance Software Professional (WordPress, Joomla, Java, PHP, Home automation, .Net)
- 2000 - 2003: Editor in charge for the Climbing and Canyoning channel on the portal www.supereva.it
- 2000 - 2003: Climbing instructor and canyoning guide for then Umbria Outdoor consortium

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Education and Training

PhD in Industrial and Information Engineering   **Nov. 2020 – Apr. 2024**

Department of Engineering, University of Perugia (Università degli Studi di Perugia) – *https://ing.unipg.it/dipartimento*

Thesis: UNCERTAINTY AWARE MACHINE LEARNING BASED MEASUREMENT SYSTEMS

Master of Business Administration (MBA). Final grade 110/110   **Jun. 2010 - Nov. 2011**

(*Master universitario di secondo livello in Business Administration. Università degli Studi E-Campus*)

MEng Computer Engineering Final grade 110/110 with honors   **2004 - 2006**

(*Laurea Specialistica in Ingegneria Informatica,* Università degli Studi di Perugia)

Thesis: *DESIGN OF AN INTEGRATED DEVELOPMENT ENVIRONMENT FOR TESTING OF ELECTRONIC DEVICES*

BS information technology engineering. Final grade 109/110   **2000 - 2004**

(Laurea triennale in Ingegneria dell'informazione, Università degli Studi di Perugia).

Thesis: *REALISATION OF A TOOL FOR THE CONTROL OF SOFTWARE QUALITY*

High school degree. Final grade 100/100   **1995 - 2000**

(diploma di maturità liceo scientifico con sperimentazione PNI, Liceo Statale Jacopone da Todi, Todi (PG).

Other Courses and Certificates

Future AWS AI Scientist Nanodegree, Udacity/AWS.   **Jun. 2025 – Nov. 2025**

IPMA Introductory Certificate in Project Management   **Oct. 2023 – Dec. 2023**

Oxford ML school 2022, AI for Global Goals   **Aug. 2022**

Azure Cloud Fundamentals, Microsoft   **Sep. 2020 - Oct. 2020**

Machine Learning Engineer with Microsoft Azure Nanodegree, Microsoft/Udacity   **Oct. 2020 - Jan. 2021**

AI Product Manager Nanodegree, Udacity   **Aug. 2020 - Oct. 2020**

Microsoft Professional Programs for Data Science, Microsoft   **Apr.2017 - May 2019**

Scrum Fundamentals Certified (SFC), Scrumstudy   **Aug. 2014**

Selected Publications (Full list available on ORCID https://orcid.org/0000-0002-2786-5931)

1. Buchicchio, E., et al. (2025). "Uncertainty Quantification in AI-Based Measurement Systems," *IEEE Instrumentation & Measurement Magazine*.
2. Buchicchio, E., et al. (2024). "Design, Validation, and Risk Assessment of LLM-Based Generative AI Systems Operating in the Legal Sector," *IEEE International Symposium on Systems Engineering (ISSE)*
3. Buchicchio, E., et al. (2023). "Battery SOC estimation from EIS data based on machine learning and equivalent circuit model," *Energy*.
4. Buchicchio, E., et al. (2023). "Uncertainty characterization of a CNN method for Lithium-Ion Batteries state of charge estimation using EIS data", *Measurement*
5. Buchicchio, E., et al. (2022). "Invisible supply chain attacks based on trojan source," *IEEE Computer*
6. Buchicchio, E., et al. (2021). "Gesture recognition of sign language alphabet with a convolutional neural network using a magnetic positioning system", *ACTA IMEKO*